must be measured. Some exceptional reader in a community may exceed in intelligence the sum of intelligence of all other readers, and even some illiterate may go beyond a number of literates. Hence only by the special study of individuals, and adding the results, can the sum total of intelligence for any community be found. But this is the task of psychology, not sociology, whose field is objective fact, social actualities like illiteracy, crime, etc., and their concomitant variations. Sociology can determine how many people read, and what they read, and the concomitant variation between the circulation of yellow journals and increase of crime; but it cannot measure the intelligence or the emotion implied, for the psychical illumination of social phenomena can come only from psychology.

HIRAM M. STANLEY.

LAKE FOREST, ILL., December 2, 1899.

NOTES ON INORGANIC CHEMISTRY.

A PECULIAR interest attaches to ammonium cyanate from the fact that it was the spontaneous conversion of this salt into urea, which first bridged over the gulf between the inorganic and organic, and in the hands of Wöhler gave the great impetus to the study of organic chemistry. Owing to its instability it has been very difficult to prepare ammonium cyanate in a pure condition. It is shown, however, in the *Proceedings* of the Chemical Society (London), by J. Walker and J. K. Wood, that the substance may be readily formed by mixing the cooled solutions of ammonia and cyanic acid in ether. It is also formed when the vapors of ammonia and cyanic acid are brought into contact, provided the reacting gases are sufficiently diluted with some indifferent gas. The transformation of solid ammonium cyanate into urea is facilitated by heat and very greatly accelerated by presence of moisture.

IN the same Journal, G. Dean describes a new series of atomic weight determinations of nitrogen. They are peculiar in their use of silver cyanid as the salt analyzed. The other atomic weights involved are those of potassium and bromin, hence the accurately determined Stas figures were available. The value found was $N = 14.031$ which is somewhat lower than the weight accepted by Clarke 14.04, and that by Richards 14.045. ($O = 16$).

IN a recent number of the *Comptes Rendus*, Moissan has described the formation of ozone by the decomposition of water by fluorin. If the temperature of the water into which the fluorin is led, is kept at or below zero, it is possible to get over 14 per cent. ozone (by volume) in the gas over the water. Moissan points out the possible practical application of this method, for though the electrolytic production of fluorin from hydrofluoric acid is still a rather difficult operation, it is not an expensive one. The ozone formed in this process has the advantage of being completely free from the oxides of nitrogen.

OF late years several explosions have taken place in factories where aluminum-bronze powder is ground. Investigations as to the cause of these explosions have been made by Stockmeier, and are reprinted in the *Chemical News*. The powder is perfectly stable, but its mixture with potassium chlorate will detonate even by rubbing. Bronze in contact with water decomposes it forming hydrogen, and it is to the presence of the hydrogen that explosions are probably due. The powder is hygroscopic and the dry powder can absorb 1.4 per cent. moisture from the atmosphere. Then in grinding up five or six kilos of bronze powder there could be moisture enough present to generate forty to fifty liters of hydrogen. A series of precautionary rules is proposed, the most important of which require dryness and absence of dust in the air about the grinding machine.

PROFESSOR E. T. ALLEN of the Missouri School of Mines calls attention in the *Chemical News* to a curious case of corrosion of gold plated weights which had been put away for the three summer months in a safe. The weights were covered with a white substance which proved to contain zinc and to be largely organic. The suggestion is made that the corrosion was caused by mould, the gold plating being, perhaps, not completely impervious, and the most positive metal, zinc, being removed from the brass. It appears to be well established now that certain hard waters have the property of dissolving the

zinc out of brass. A more important question is raised by Professor Allen, as to whether, under ordinary working conditions in the laboratory, gold plated weights are preferable to brass weights. J. L. H.

*BEEREN EILAND.**

THE Swedish Arctic Expedition of 1898, under the leadership of Professor A. G. Nathorst, spent a week on Beeren Eiland, mapped it on a scale of 1 : 50,000, and made numerous observations on its natural history. Chief among these were the geological researches which proved a prehistoric local glaciation, and by means of fossils showed the presence of rocks of three systems: Silurian, Middle Carboniferous, and Trias, previously unknown on the island. These discoveries led to another expedition to Beeren Eiland during the past summer. The expenses were borne by the Vega Stipend of the Swedish Geographical Society, the Lars Hierta Memorial Fund, and various private individuals. The leader was the geologist, J. Gunnar Andersson of Upsala, who had accompanied Professor Nathorst; the other scientific members were C. A. Forsberg, cartographer and meteorologist, and G. Swenander, zoologist and botanist. The expedition stayed on Beeren Eiland from June 22d to August 19th, and accomplished the following work:

The whole island was mapped in greater detail, and a special map, on a scale of 1:5000, was made of Ryssham, where the expedition had its headquarters.

From June 25th to August 16th complete meteorological observations were taken twice a day, as well as continuous observations by a self-registering barometer and thermometer. Eight series of observations were made on the tides, each series extending over from 8 to 51 hours, during which time the height of the water at intervals of half an hour was marked off on a section.

The botanist collected all the phanerogams previously found on the island, as well as *Koenigia islandica*, hitherto unrecorded. Exhaustive collections were also made of the lower plants, including the algæ of red and green snow. To investigate the influence on plant-growth of the continuous light of an Arctic summer, three series of cultivation experiments were carried out, as follows: First, in five places of nearly the same longitude, but at a distance of about 3 or 4 degrees of latitude from one another—namely, Svalöf, in Scania, Ultuna, near Upsila, Luleå, Tromsö, and Beeren Eiland—barley taken from the same sample was grown in soil from the same place. Only the climatic conditions, and especially those of light, were different in the different stations; thus there were completely dark nights in Scania, complete light the whole 24 hours on Beeren Eiland, with intermediate conditions at the intervening places. The material from the Scandinavian stations has not yet been brought in, so that the results of this interesting experiment are still awaited. Secondly, on open land at the Beeren Eiland station there were cultivated two precisely similar series of Arctic plants, of which one series stood in continual light, while the other was kept in complete darkness each night (8 p. m. to 8 a. m.). During the period of the experiment the development of these plants did not proceed very far, but the series kept in the light was obviously the more sturdy. The third experiment consisted in the cultivation, on a hot-bed, of a score of common Scandinavian plants. These also were in two similar series, one kept in the light, the other darkened by night. The experiment succeeded with 18, and of these 16 were clearly more sturdy in the light series, some of them yielding examples half as large again as those in the darkened series.

To the list of the island's fauna were added two birds: the Skua (*Lestris pomatorhina*) and the Spitzbergen form of *Mormon articus*. *Salmo alpinus* was found in a lake. Special attention was paid to the insects, which on isolated oceanic islands are of much interest to the student of distribution. Holmgren, the only entomologist who had previously visited Beeren Eiland, found there in 1868 only 9 species of Diptera and 1 Hymenopteron. The Swedish expedition has brought back a large collection of Diptera, not yet worked through, 4 Hymenoptera, 1 Neuropteron and 2 Coleoptera. Holmgren found only 2 Acarids; the present explorers have at least 10.

* From *Natural Science.*